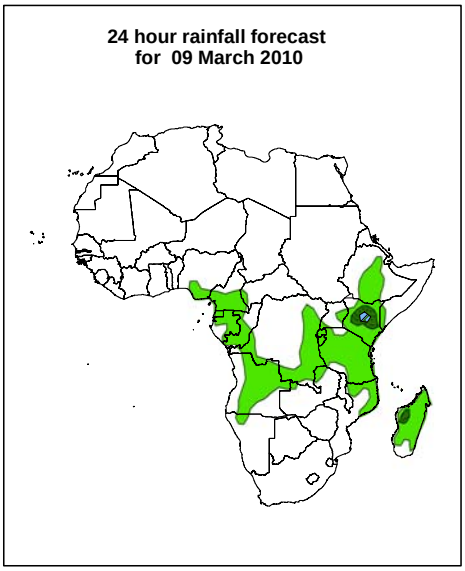
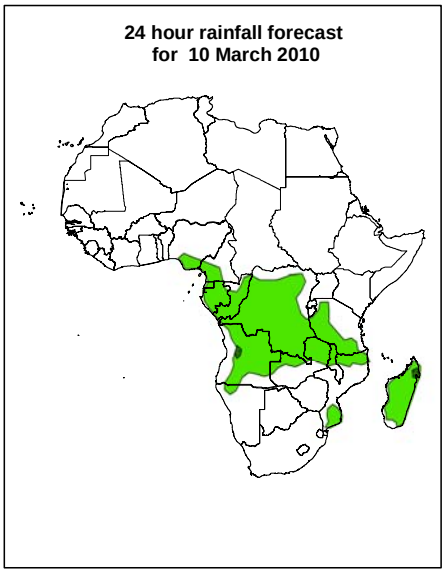
NCEP Contributions to the WMO Severe Weather Forecasting Demonstration Project (SWFDP) and to the African Monsoon Multidisciplinary Analysis (AMMA) Initiative

1.0. Rainfall Forecast: Valid, 06Z of 09 March –06Z of 11 March 2010, (Issued at 14:00EST of 08 March 2010)

1.1. Twenty Four Hour Cumulative Rainfall Forecasts

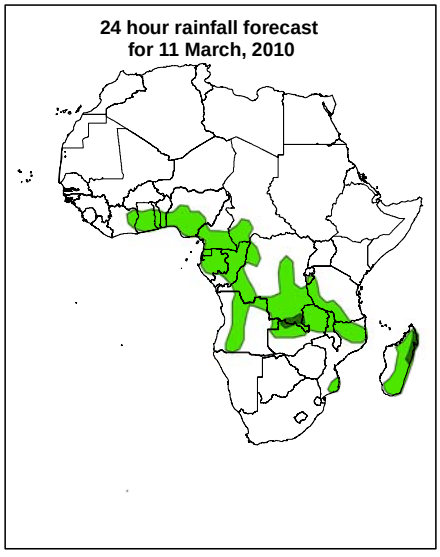
The forecasts are expressed in terms of probability of precipitation (POP) exceedence based on the NCEP, UK Met Office and the ECMWF NWP outputs, the NCEP global ensemble forecasts system (GEFS) and expert assessment.





Legend

- > 40mm per day
- > 20mm per day
- > 10mm per day



Summary

The interaction between the mid-latitude frontal and tropical weather systems across northeast Africa is expected to maintain the light to moderate rainfall over the Horn of Africa through 24 hrs. On the other hand, the seasonal convergence over the CAB region, the East African monsoon flow over southeast Africa and the low level convergence zone over the coastal areas of the Gulf of Guinea are expected to maintain rainfall in excess of 10mm per day in 24 to 72 hours.

1.2. Models Comparison and Discussion - Valid from 00Z of 08 March 2010

In 24 hours, a low pressure system located over coastal Northwestern Africa, with central pressure value of 1002mb is expected to move eastwards while slightly deepening in 24 to 48 hours. Another low pressure system located over eastern Mediterranean Sea, with central pressure value of 997 is expected move eastwards while deepening to 995mb and its trough axis extends up to southeast Libya in 24 to 72 hours. These low pressure systems are expected weaken gradually and be replaced by weak low pressure cells over the Sahara regions through 48 to 72 hours. Low pressure systems over the Mozambique Channel and east of Madagascar with central pressure values of 1008mb and 1009mb, respectively, are expected to expand slightly with a slight change in central pressure value through 24 to 72 hours. Besides, low pressure systems located along the west coasts of Angola, Namibia and South Africa with central pressure values of 1009mb, 1011mb and 1012mb, respectively, are expected to maintain their position with a slight change in central pressure in 48 to 72 hours. On the other hand, a ridge originating from the Azores is expected to extend its ridge axis up to east of Mali in 24 hours while maintaining its position in 48 hours. Sub tropical ridge extending to the Persian Gulf across the Arabian Peninsula with central pressure values of 1021mb to 1025mb is expected to maintain its position, while weakening gradually in 48 to 72 hours. Localized high pressure system located over Ethiopia with central pressure value of 1020mb is expected to remain in the same position with slight change through 24 to 72 hours. A low pressure zone associated with the equatorial trough is expected to deepen slightly across the western to central parts of equatorial Africa, with central pressure values of about 1006 to 1007mb over Gulf of Guinea, 1005 to 1004mb over Central African Republic and 1005 to 1004mb over southern Sudan through 24 to 72 hours.

At 850mb level, a mid latitude trough from western Mediterranean Sea is expected to deepen, while extending its axis up to northern Nigeria in 24 to 48 hours. This trough is expected to retreat northwards and it gives way to the subtropical ridge in 72 hours. A deep trough in the southeastern Atlantic Ocean, with its axis aligning along 10^{o}E longitude is expected to enhance rainfall over southern coast of South Africa in 24 hours, while weakening in 48 to 72 hours. Moreover, a deep cyclonic circulation developed over east coast of Mozambique is expected to enhance wet weather activity over Mozambique and adjoining areas in 48 to 72 hours. On the other hand, the peripheral winds from the Arabian anticyclone are expected maintain the incursion of moist air towards eastern Africa region in 24 hours. Besides, the East African monsoon flow is expected to maintain the light to moderate rainfall activity over southern and central regions of Africa through 24 to 48 hours.

In 24 to 72 hours, the seasonal convergence over the Congo Air Boundary (CAB) region is expected to remain active. In addition, localized convergences are expected to dominate the flow over Angola, central part of South Africa, Togo, Congo, Central African Republic, Northwestern DRC and Uganda as well as southwestern and western and Ethiopia.

At 500mb level, mid latitude troughs with a strong wavy pattern are expected to dominate the flow over subtropical regions of Africa. Especially, the mid latitude trough extending from southern Europe is expected to move eastwards in 24 to 48 hours. Similarly, a mid latitude trough in the southern hemisphere is expected to assume a strong pattern in 24 to 72 hours.

At 200mb, northern parts of Africa will have westerly flow with a wavy pattern. The wind associated with this flow is expected to exceed 130 knots, stretching across northern Atlantic to northwest Algeria. On the other hand, across northern Atlantic to north central Algeria, west of Libya to east of Mediterranean Sea, western part of Western Sahara to western Algeria and northwestern tip of Algeria to central Mediterranean Sea will have wind speeds of 110 knots, in 24 to 72 hours.

The interaction between the mid-latitude frontal and tropical weather systems across northeast Africa is expected to maintain the light to moderate rainfall over the Horn of Africa through 24 hrs. On the other hand, the seasonal convergence over the CAB region, the East African monsoon flow over southeast Africa and the low level convergence zone over the coastal areas of the Gulf of Guinea are expected to maintain rainfall in excess of 10mm per day in 24 to 72 hours.
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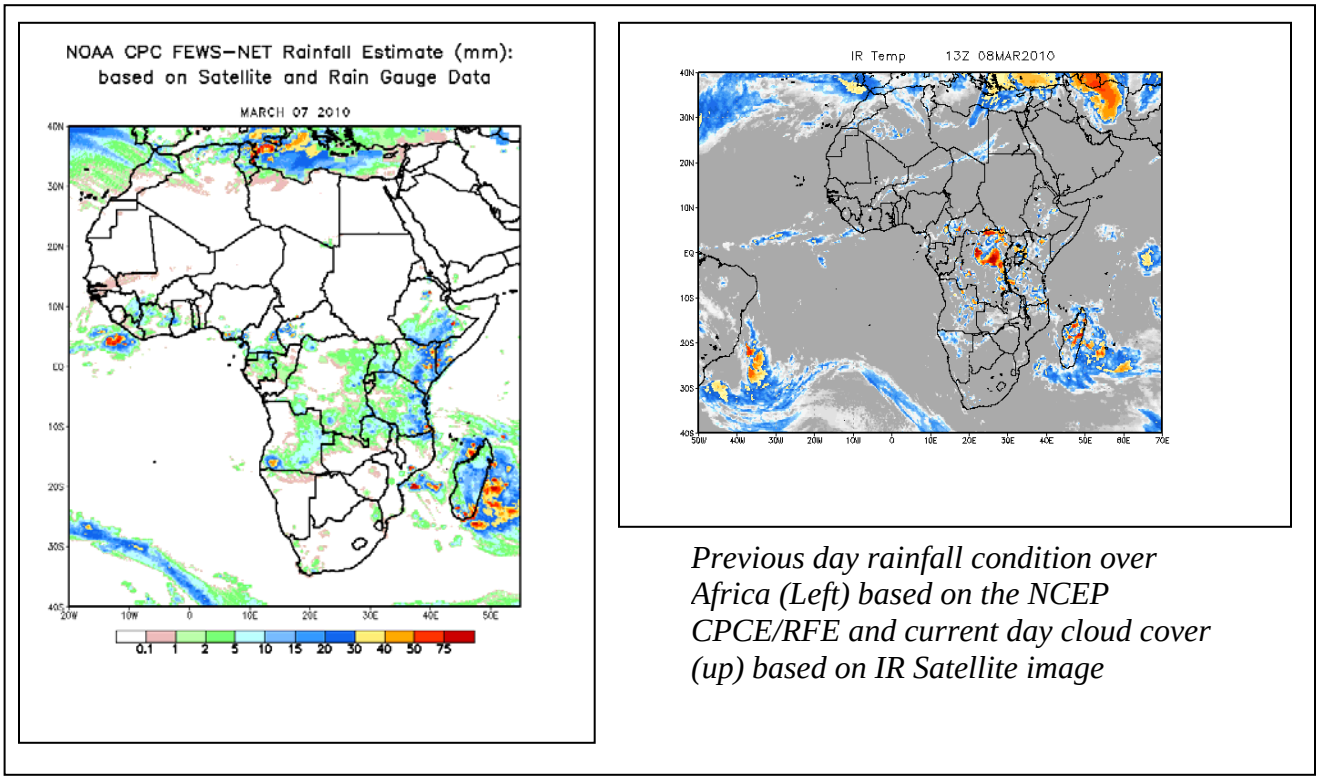
2. 0. Previous and Current Day Weather Discussion over Africa (07-08 March 2010)

2.1. Weather assessment for the previous day (07 March 2010): During the previous day, moderate to heavy rainfall events were observed over parts of eastern Kenya, few places of northeastern and southeastern Ethiopia, some places of eastern Tanzania, much of Madagascar and few places of southwestern Angola.

2.2. Weather assessment for the current day (08 March 2010): isolated patches of intense clouds are observed over northern and central DRC and northern tip of Madagascar as well as places between border of Tanzania and DRC.



Previous day rainfall condition over Africa (Left) based on the NCEP CPCE/RFE and current day cloud cover (up) based on IR Satellite image

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